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10/538,886	03/24/2006	Romolo Montanari	273332US0XPCT	8847
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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER NGUYEN, TAM M	
			ART UNIT 1797	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/538,886	Applicant(s) MONTANARI ET AL.	
	Examiner TAM M. NGUYEN	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/9/09; 4/16/09</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Response to Amendment

The rejection of claims 1-36 under 35 USC § 112 is withdrawn by the examiner in view of the amendment filed on April 16, 2009.

Since a new non-final rejection follows, applicants' arguments will not be addressed.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 39 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation in claim 39 renders the claim indefinite because if the hydrotreatment product is sent directly to the distillation or flash units, there would be no high pressure separation pre-step and there is no light fraction containing C₁-C₄ gas and H₂S produced in the process of claim 1.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible

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harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1 and 3-36 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-11 and 14-38 of copending Application No. 10/539,058. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims draw to a process for converting a heavy feedstock by utilizing three process units: hydrotreating, distillation or flash, and deasphalting. There are some minor variations between the two sets of claims and such variations would have been obvious to one of skill in the art.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1 and 3-36 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-26 of copending Application No. 11/311,134. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims draw to a process for converting a heavy feedstock

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by utilizing three process units: hydrotreating, distillation or flash, and deasphalting. There are some minor variations between the two sets of claims and such variations would have been obvious to one of skill in the art.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1 and 3-36 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-40 of copending Application No. 11/311,147. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims draw to a process for converting a heavy feedstock by utilizing three process units: hydrotreating, distillation or flash, and deasphalting. There are some minor variations between the two sets of claims and such variations would have been obvious to one of skill in the art.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 39 is rejected under 35 U.S.C. 102(b) as being anticipated by Marchionna et al. (US 5,923,090).

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Marchionna discloses a process for the conversion of a heavy crude oil or distillation residues to distillates by mixing the heavy crude oil with a decomposable precursors hydrogenation catalyst comprising molybdenum and sending the mixture of the crude oil and catalyst to a hydrotreating zone in the presence of a mixture of hydrogen and H₂S to produce a stream comprising hydrocarbon product and catalyst in slurry phase. The stream is then passed into a distillation zone wherein light fractions are separated from a distillation residue. The residue is then sent to a deasphalting zone utilizing a solvent to produce a first stream consisting of deasphalted oil (DAO) and a second stream comprising asphaltenes, coke, metal, and the catalyst in slurry phase. Up to 100% of the second stream is then recycled back to the hydrotreating zone. The hydrogenation is operated at a temperature between 370 and 480° C and at a pressure between 30 and 300 atm (3 and 30 MPa). The deasphalting zone is operated at temperature between 40 and 200° C and at a pressure between 1 and 50 atm (0.1 to 5 MPa). A light paraffin having from 3 to 6 carbon atoms is used as a solvent. The distillation zone is carried out at a reduced pressure, so it would be in the claimed ranges. The example indicated that the concentration of the catalyst is about 3000 ppm. (See abstract; Figure 1; col. 1, lines 60-64; col. 2, line 19 through col. 3, line 15; 0-61;

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 and 3-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marchionna et al. (US 5,932,090) in view of either Taylor (US 5,124,026) or van Klinken et al. (U.S 4,039,429).

Marchionna discloses a process for the conversion of a heavy crude oil or distillation residues to distillates by mixing the heavy crude oil with a decomposable precursors hydrogenation catalyst comprising molybdenum and sending the mixture of the crude oil and catalyst to a hydrotreating zone in the presence of a mixture of hydrogen and H₂S to produce a stream comprising hydrocarbon product and catalyst in slurry phase. The stream is then passed

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into a distillation zone wherein light fractions are separated from a distillation residue. The residue is then sent to a deasphalting zone utilizing a solvent to produce a first stream consisting of deasphalted oil (DAO) and a second stream comprising asphaltenes, coke, metal, and the catalyst in slurry phase. Up to 100% of the second stream is then recycled back to the hydrotreating zone. The hydrogenation is operated at a temperature between 370 and 480° C and at a pressure between 30 and 300 atm (3 and 30 MPa). The deasphalting zone is operated at temperature between 40 and 200° C and at a pressure between 1 and 50 atm (0.1 to 5 MPa). A light paraffin having from 3 to 6 carbon atoms is used as a solvent. The distillation zone is carried out at a reduced pressure, so it would be in the claimed ranges. The example indicated that the concentration of the catalyst is about 3000 ppm. (See abstract; Figure 1; col. 1, lines 60-64; col. 2, line 19 through col. 3, line 15; 0-61;

Marchionna does not specifically teach that the product stream is subjected to a high pressure separator to obtain a light fraction and a heavy which is sent to the distillation step, and does not specifically disclose that the deasphalting step is carried out under subcritical or supercritical, and does not disclose a step of fractionating the DAO stream in a conventional distillation, and also Marchionna does not teach that the light fraction from the high pressure separator is sent to a second hydrotreating.

Taylor teaches a process for converting residual hydrocarbons into distillates wherein a product stream from in first hydrotreating zone is then separated into produce a light fraction which is then sent to a second hydrotreating zone and a heavy fraction which is then passed into a deasphalting zone. The second hydrotreating zone is operated at a pressure in the range of about 1000 psi to about 1800 psi (6.9-12.4 MPa). See Figure 1; col. 9, lines 20-23.

Van Klinken teaches a process for converting residual hydrocarbons into distillates wherein a product stream from a first hydrotreating zone is passed into a separation zone to produce a light fraction which is then sent to a second hydrotreating zone which is operated at a hydrogen partial pressure of from 20 to 75 bars (2- 7.5 MPa). With hydrogen/feed ratios from about 200 to 1500 N1/kg, it is estimated that the total pressure is within the claimed ranges. See abstract; Figure 1; col. 4, lines 13-23.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Marchionna by passing the light fraction from the high pressure separator to a second hydrotreating as suggested by either Taylor or Van Klinken to further remove contaminants such as sulfur and nitrogen compounds from the light fraction.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Marchionna by operating the deasphalting zone at either subcritical or supercritical conditions. It is within the level of one of skill in the art to operate the deasphalting zone of Marchionna at either subcritical or supercritical conditions because of the similarities between the claimed deasphalting conditions and the deasphalting conditions of Marchionna.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Marchionna by separating the DOA in a conventional distillation to recover the solvent from the DOA for reuse.

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Marchionna does not disclose a step of further treating the flushing stream with solvent as claimed, and does not disclose the amount of the flushing stream with respect to the fresh feedstock.

Taylor discloses a deasphalting process wherein the asphaltenes stream from the first solvent extraction is passed to a second solvent extraction zone. The ratio of solvent to feed is from about 3:1 to 20:1. See abstract; Figure 5, col. 9 line 58 though col. 10 lines 24.

Taylor does not teach that the solvent is toluene or xylene.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Marchionna by treating flushing stream 9 with solvent as taught by Taylor to enhance the recovery of valuable hydrocarbon from the asphalting stream.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Marchionna/Taylor by utilizing toluene or xylene as solvent because Taylor teaches that other solvent can be used and one of skill in the art would employ any solvent, which is effectively extracted liquid hydrocarbons from asphaltenes, including xylene or toluene. Also, it is within the level of one of skill in the art to further process the liquid hydrocarbons to produce distillates such as a fuel oil fraction or recycled the extracted liquid hydrocarbons back to hydrotreating zone to produce distillate products. Consequently, a solid fraction from the extracting step would comprise spent catalyst which would need to be treated to restore its activity before recycling back to the hydrotreating zone for reuse.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Marchionna by having a flushing stream in a

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quantity from 0.5 to 10% by volume with respect to the feedstock because Marchionna teaches the flushing stream is a part of stream 7 and a large quantity of stream 7 is recycled back to the hydrotreating zone. One of skill in the art would have a flushing stream in any small quantity including the claimed quantity.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TAM M. NGUYEN whose telephone number is (571)272-1452. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tam M. Nguyen
Primary Examiner
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/Tam M. Nguyen/

Primary Examiner, Art Unit 1797